



**AVIT**  
AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY



**VINAYAKA MISSION'S  
RESEARCH FOUNDATION**  
(Deemed to be University under section 3 of the UGC Act 1956)



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# SIEMENS - INTEGRATED ENGINEERING DESIGN RESEARCH LAB

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING CONSULTANCY BROCHURE

### VISION

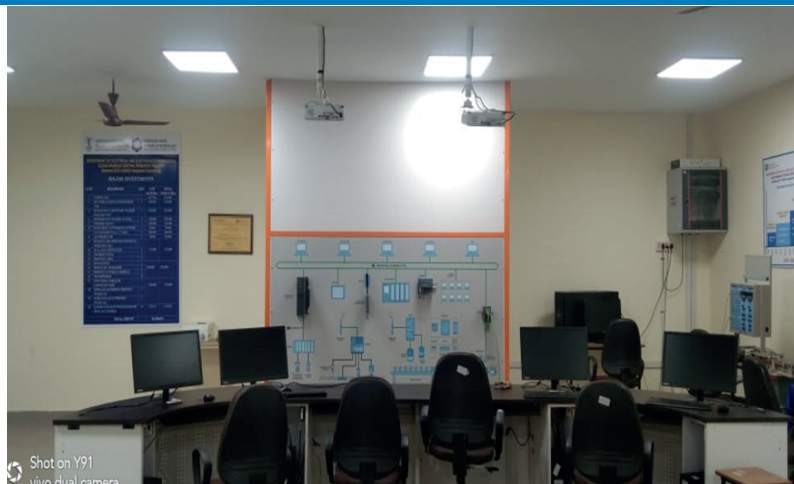
To be recognized as an innovative and distinguished center and a provider of unique software solution for holistic plant management in the process industry and Process Automation with interdisciplinary education, nurturing research and development skills among students.

### MISSION

1. To create, develop and foster capacity amongst students to become future development in industries and application that advances their ability to solve problems individually and in teams.
2. To create knowledge of fundamental principles and innovative technologies through learning, teaching and research in multi-disciplinary domains, focusing on project management, manufacturing, virtual commissioning, operator training in automation and Mechatronics systems.
3. To facilitate academics - industry interaction.

# About the Central Research Facility

The integrated COMOS software solution makes it possible to consolidate automation data from the control systems of different providers and make it available for re-engineering or for a new control system.



## FACILITIES AVAILABLE AT THE CENTER

### Hardware

1. Distributed Control System
2. Remote Labs (Process Control & Wire less Lab )
3. Distributed I/O
4. RFID System
5. SIMATIC RF 200 Reader
6. Profinet Interface Module
7. Industrial Wireless Communication

### Software

1. COMOS Plant Engineering Software
2. SIMATIC PCS 7, Software Trainer Package V 8.2
3. SIMIT Simulation Framework

## Digital Twin

A Digital Twin is a digital model of a particular physical element or a process with data connections that enable convergence between the physical and virtual states at an appropriate rate of synchronization .

An exact digital replica of something in the physical world, digital twins are made possible with Internet of Things (IOT) sensors that gather data from the physical world and send it to machines to reconstruct.

The facility provides the companies for many reasons including improvement of ongoing operations, train employees and to test new products or procedures before launching them to the real world where it becomes more expensive and complicated to fix any issues. It provides the integration of multiple software and hardware such as

- COMOS
- SIMATIC Manager
- SIMIT
- DCS
- IIOT 2040

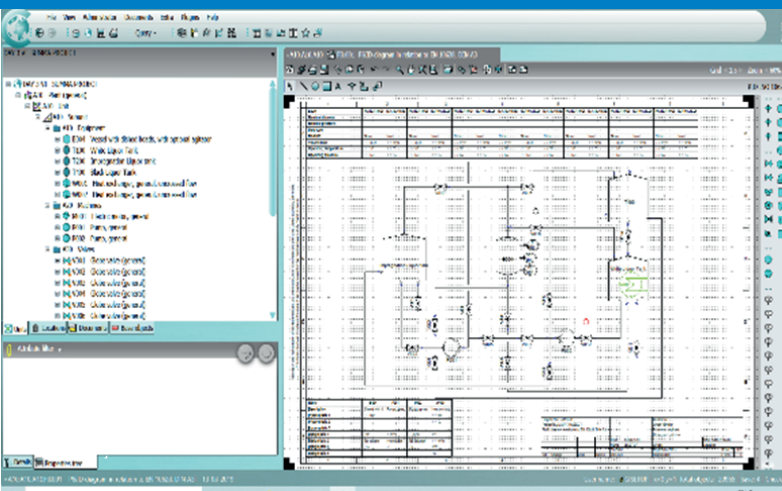
# COMOS

COMOS is a plant engineering software solution of the Siemens. The applications for this software lie in particular in the process industries for the engineering, operation, and maintenance of process plants as well as their asset management.

COMOS is an engineering software developed to process industries and which includes CAE (Computer Assisted Engineering), CMMS (Computerized Maintenance Management System) and DMS (Document Management System) components.

With an innovative approach, COMOS allows the application of concurrent engineering, where flowcharts and engineering data can be manipulated by many engineers, technicians, and designers at the same time.

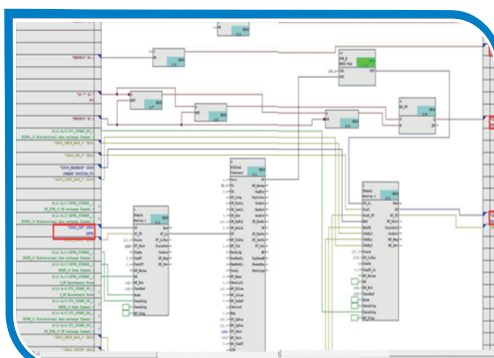
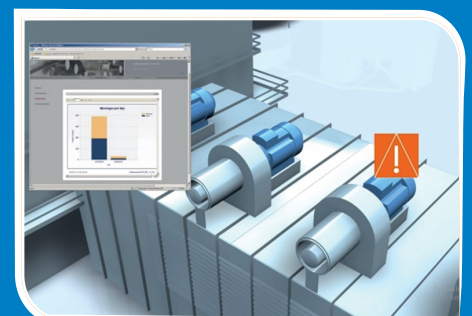
Engineering documentation is one of the first thing to benefit from using digitalization. Because the documents are generated from the engineering database, whenever an object needs to change, the documentation is automatically updated. The documents that can be linked are usually the following:



SIEMENS			
Projekt: Kreiselpumpe		Verfahrensdatenblatt	
Projektnummer: Basic (usercheck)	Kunde: P001	Apparat Nr.: P001	Anlage Nr.: P001
Auftrag Nr.: 10.0001.0001.0001	Ort: 10.0001.0001.0001	Ort: 10.0001.0001.0001	Ort: 10.0001.0001.0001
Allgemeine Informationen			
1 Hersteller	Antriebstyp		Kein Antrieb
2 Pumpentyp	Bemerkung		
3 Gewicht	kg		
4 Fläche	m²		
Technische Daten			
7 Auslegungstemperatur	100 °C	Maximaler Schalldruckpegel	dB
8 Auslegungsdruck	bar	Antrieb	
9 Zulässige Betriebstemperatur	°C	Innenbeschichtung	
10 Zulässiger Betriebsdruck	bar	Auslegung	
11 Nennweite (DN) Einlass		Betriebsförderhöhe	mm
12 Nennweite (DN) Auslass		Fördervolumen	m³/s
13 Nenndruck (PN) Einlass		NPSH berechnet	mm
14 Nenndruck (PN) Auslass		Geodätische Zulußhöhe	mm
15 Material mit Produktbezeichnung		Reinigung	
16 Werkstoff Dichtung		Zeitintervall	s
Verfahrensdaten			
17 Medium			
18 Aggregatzustand	S/m	Isentropenexponent	
19 Leitfähigkeit		Kompressibilitätsfaktor	
20 Siedepunkt		Chemisches Kinetik	
21 Taupunkt		Exothermieklasse VbF	
22 Fließpunkt			

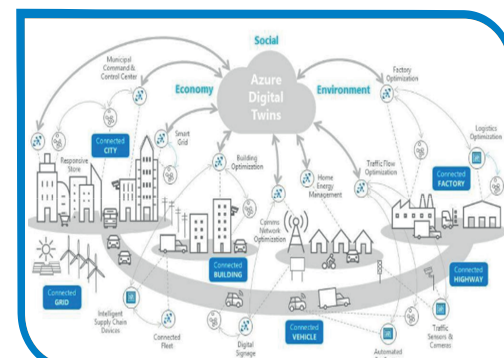
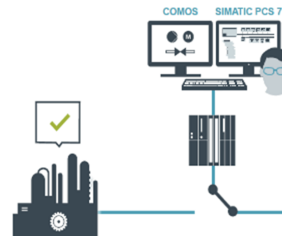
## THE FACILITY CAN BE UTILIZED FOR

1. Design of low level and high level electrical and Instrumentation Layout
2. Design of Automation Systems
3. Plant Level simulation and Virtual Commissioning Certification Training Programmes
4. Continuing Education Programme for Industry persons
5. Consultancy for Industrial Automation
6. Smart City architecture and applications
7. Smart Campus Monitoring
8. Centralised facility for remote monitoring and control of different facilities.
9. Maintenance Management
10. Central Data Management



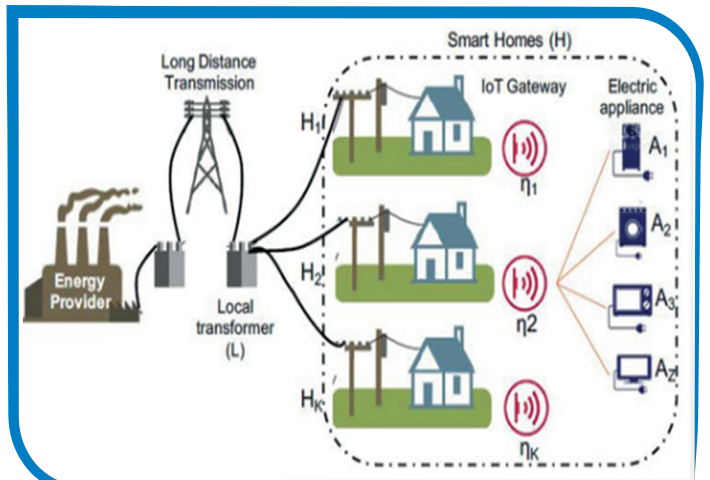
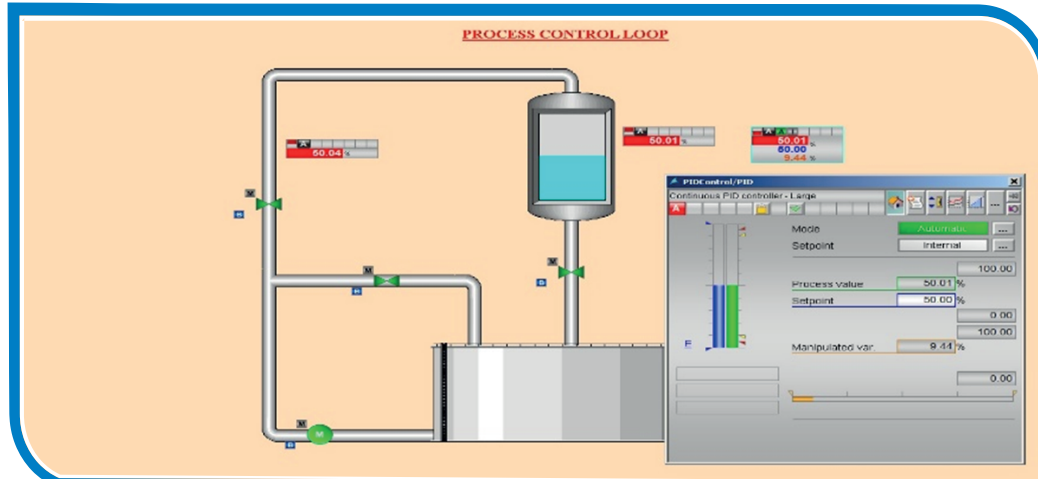
### Virtual Commissioning

Effective and smooth system start-up of the real plant



# Industrial sectors which can utilize the facility

- Power Sector
- Automation Sector
- Manufacturing Sector
- Energy Management Sector



**Siemens Integrated Engineering Design Research Lab**

Department of Electrical and Electronics Engineering

Contact person: **Mr.S.Prakash**, AP(Gr-II)/EEE, AVIT

Mobile no. : +91-9943183282 | e-mail: [sprakash@avit.ac.in](mailto:sprakash@avit.ac.in)

Vinayaka Nagar, Old Mahabalipuram Road, Paiyanoor- 603104, Chenglepattu District, Tamilnadu.